



INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR
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**A Biannual Newsletter
(OCTOBER-2025 TO MARCH-2026)**

**DEPARTMENT OF
MINING ENGINEERING**

(Serving the nation since 1906)



Indian Institute of Engineering Science and Technology, Shibpur

An Institute of National Importance

भारतीय अभियांत्रिकी विज्ञान एवं प्रौद्योगिकी संस्थान, शिवपुर

ABOUT THE DEPARTMENT

It is with great enthusiasm this edition of newsletter, showcasing the remarkable achievements and ongoing efforts of the Department of Mining Engineering at IEST, Shibpur. Since its inception, the Department has been at the forefront of advancing education, research, and innovation in the dynamic field of mining engineering.

With a keen focus on sustainable practices, safety, and environmental stewardship, faculty members are dedicated to tackling the industry's challenges through pioneering research, cross-disciplinary collaborations, and the cultivation of highly skilled professionals. Unwavering commitment of the department is to shape the future of mining engineering and play a pivotal role in driving the global growth and sustainability of the mining sector.

The vision of the Department of Mining Engineering is both ambitious and focused: to lead pioneering research and educational initiatives in areas crucial to the mining industry, national development, and safety. The aim of the department is to develop innovative and sustainable solutions to complex mining challenges, ensuring resource efficiency, environmental stewardship, and the highest standards of safety. Through collaborative efforts with various departments within the institute, industry partners, and relevant academic, technological, and management institutions, the department aspires to establish itself as an internationally recognized Centre of Excellence in mining engineering.

This issue highlights the department's academic and research activities, including the programs offered, key areas of focus, and the outcomes achieved through our collective efforts. Notable achievements include publications in prestigious journals, ongoing research and development projects, and state-of-the-art laboratories that support the research initiatives, particularly in the field of mining safety and risk management.

The impactful advancements in mining technologies and safety protocols require the active collaboration of multiple stakeholders. At the Department of Mining Engineering, faculty members are strive to develop strategies and models that bring together academia, industry, and society to drive meaningful innovations that can transform the mining sector while safeguarding the well-being of workers and communities.

Courses Offered

1. **B. Tech (Mining Engineering)**
2. **M. Tech (Mining and Mineral Engineering)**
3. **Ph.D**

Thrust Area of Research

Rock slope engineering

Strata control

Carbon capture

Utilization and storage in geological media

AI/ Machine learning (ML) applications in mining processes

Mathematical modeling

Reserve estimation

IOT in mines

Biomining/bioleaching

Mine Waste to wealth

Extraction of metal from tailings/low grade ores

Environmental Pollution Control

Environmental Management in mines (EMP)

Environmental Impact Assessment (EIA)

Occupational Health & Safety

Ergonomic application in mining process

Coal and Metalliferous mining methods

Mining Machinery

Coal Quality Upgradation

Blasting in Mines

Coal/Mineral Processing

Patent granted

“DEVICE FOR RISK EXPOSURE ASSESSMENT FROM WHOLE BODY VIBRATIONS FOR MINE WORKERS”, Dr. Sunil Kumar Bisoyi, Mr. Swayam Suvam Nayak, Dr. Rajni Kant and Shailendra G.Bommanwar.

Honour received from Outside IEST

Prof. Sudipta Mukhopadhyay was nominated as Member of the Samsad(Court) of Visva-Bharati, nominated by the Hon'ble President of India in her capacity as Paridarsaka (Visitor) of Visva-Bharati University, vide letter F. No. 2-6/2023-CU.III/CU.II dated 03.11.2025 by the Ministry of Education, Department of Higher Education, Government of India.

Publication

Journal

- Ghosal, Tanmoy & Mukhopadhyay, Sudipta; Simulation-Driven Prediction of Operator Behaviour to Improve Safety and Productivity in Opencast Mining; Journal of Mines, Metals and Fuels ; Volume 74, Issue 3, March 2026, pp. 277-285.
- Ghosal, Tanmoy & Mukhopadhyay, Sudipta; Total Productivity Enhancement and Safety Improvement Through Mines Simulation and Digitalisation; Journal of Mines, Metals and Fuels; Volume 74, Issue 3, March 2026, pp. 269-275.

- Bisoyi, S. K., Khatti, J., Fissha, Y., Behara, B., Pal, B. K. and Sazid, M., "Optimizing Blast Induced Vibration Predictions using Hybrid ANM: A Study in Dongri-Buzurg Mine, Journal of Applied Geophysics, October, 2025, pp. 105867.

Conference

- Dongiri, P., Rao, N. K., Ram, S. and Roy, G. C., "Numerical Analysis on Progressive Goaf Advancement in Continuous Miner Workings", Proceedings of Asian Mining Congress, November 2025, pp. 253-266.
- Artificial Intelligence Revolutionizing Underground Mining: Transforming mining operations and the entire value chain. Presented at UMMEED December 2025, organized by ECL.
- Dongiri, P., Rao, N. K., Roy, G. C. and Ram, S., "Design of Support System for Longwall Gate Roadways Using Displacement Profile - A Numerical Modelling Approach", Proceedings of Asian GREEN organised by IIT, Kharagpur, December. 2025.

Ongoing R&D Project

- Integration of UAV based 3D Terrain Modelling and AI Enabled Blast Design Optimization for Improved Blast Efficiency in Opencast Mines, PI: Dr. S. K. Bisoyi, Funding Agency: TEXMiN Centre of Excellence, IEST, Shibpur.

- Scientific study for design of extraction methodology for depillaring of Panel PC-4 and PC-5 in RVIIC Seam using Low Height Continuous Miner (LHCM) at Nakrakonda Kumardihi- B Colliery, PI: Dr. Gopal Chandra Roy, Funding Agency: JMS Pvt. Ltd.
- Scientific study of subsidence above proposed depillaring panels in UK Bottom seam and subsequent depillaring panels of MK seam and LK-II seam and its effect on railway land, PI: Dr. Sunny Murmu, Funding Agency: South Eastern Coalfields Limited.

Ongoing Consultancy Project

- Scientific study for drivage/extension of inclines by road header at MIC Unit and 3&4 Incline unit of Jhanjra Project Colliery , ECL.
- Scientific Study of the Ultimate Slope of the Pit of the Workings near Jambad More as suggested by DGMS, ECL.
- Scientific study for depillaring of two panels at Seam-RVIIC for Kumardihi-B UG Mine, ECL at JMS HO_ISD project, JMS Mining Private Ltd.
- Certification of progressive mine closure activities of Sial Ghogri Coal Mine, RCCPL Pvt. Ltd.
- Scientific study related to grant of EC of Madhuband Colliery of BCCL, Indukuri Madhuband Projects Private Limited.
- Scientific review and validation of blasting study, GMMCO Technology Services Ltd.
- Scientific study for determination of RMR and preparation of SCAMP under Regulation 123 of CMR 2017 for Sripur (RVI) Seam, Bejdih Colliery, Sodepur Area, Eastern Coalfields Limited.
- Third party monitoring/auditing of mine closure activity of BCCL mines, BCCL.

Events Organised by the Department

- Expert Webinar on “Applications of Artificial Intelligence and Computer Vision in Mining Operations” Speaker: Expert from Strayos USA on February 03, 2026.
- Meeting on Deswik-IIEST Education Partnership Programme on February 04, 2026.
- Annual Technical Fest INITIUM 11.0 organised by the department on March 06-07, 2026.
- Special Lecture on Explosives, Speaker: Dr. Sujit Kumar Mandal, Former Senior Principal.